



2007 Calif. Building Code Conventional Construction Provisions – Section 2308

STATE STRE.

Conventional Construction

- ◆ Section 2308 (previous 2320.11)
- ◆ Different from past in locations, details and some requirements.
- ◆ No Seismic Zones (1-4)
- ◆ Now must determine "Seismic Design Factor"
- ◆ Can use for all occupancies except Essential Services buildings.

Conventional Construction

- ◆ Information needed on plans 1603.1 exception;
 - Floor & roof live loads (Table 1607.1).
 - Basic wind speed (85 mph), 3 second gusts (38 mph), and wind exposure (Figure 1609).
 - SDC & site class (Table 1613.5.2).
 - Flood data (if applicable)

Conventional Construction

- ◆ SDC = "A classification assigned to a structure based on its occupancy category and the severity of the design earthquake ground motion at the site."
- ◆ May be calculated from Chapter 16, or....

Conventional Construction

- ◆ USGS Website for program.

<http://earthquake.usgs.gov/research/hazmaps/index.html>

- ◆ For Lat/Longitude by address;

– <http://www.topozone.com/viewmaps.asp>

- ◆ City of Santa Barbara is all SDC “D” or “E”, with some “F” for essential services buildings.



Earthquake Hazards Program

[Home](#) | [Earthquake Center](#) | [Regional Information](#) | [About Earthquakes](#) | **[Research & Monitoring](#)** | [Other Resources](#)You are here: [Home](#) » [Research & Monitoring](#) » [Seismic Hazard Mapping](#)[NSHM Home](#)[Seismic Hazard Maps](#)[Custom Mapping Analysis Tools](#)**[Seismic Design Value for Buildings](#)**[Earthquake Hazards 101](#)[Project Information and News](#)[Related Links](#)[NSHM FAQ](#)[NSHM Site Map](#)[A-Z Site Index](#)

Seismic Design Values for Buildings

Earthquake Ground Motion Parameter Java Application

The Java Application includes hazard curves, uniform hazard response spectra, and design parameters for sites in the 50 states of the United States, Puerto Rico, and the U.S. Virgin Islands. Design parameters are also available for Guam and American Samoa. Parameters are searchable by zip code or latitude and longitude, can be graphed, saved, and printed for later use.

Note: The Ground Motion Parameter Calculator is a Java(TM) Application and requires the [Java\(TM\) Runtime Environment version 1.5.0 or higher](#). This application also requires an active internet connection to retrieve data from our servers.

[Java Ground Motion Parameter Calculator - Version 5.0.7 \(3.5 MB\)](#)

Please read our [Frequently Asked Questions](#) if you before emailing your question.

Any additional questions or comments about this application should be sent to [Nicolas Luco \(Research Structural Engineer\)](#).

Any additional questions regarding installation or other technical issues should be sent to [Eric Martinez \(IT Specialist\)](#).

Ground motion parameters available in the new application

1. USGS Probabilistic Hazard Curves (1996 and 2002 for the 48 conterminous states, 1998 Alaska, 1998 Hawaii, 2003 for Puerto Rico and the Virgin Islands)
2. USGS Uniform Hazard response Spectra Curves (1996 and 2002 for the 48 conterminous states, 1998 Alaska, 1998 Hawaii, 2003 for Puerto Rico and the Virgin Islands)
3. NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures (1997, 2000, and 2003 editions)
4. ASCE 7 Standard, Minimum Design Loads for Buildings and Other Structures (1998, 2002, and 2005 editions)
5. International Building Code (2000, 2003, and 2006 editions)
6. International Residential Code (2000, 2003, 2004 supplement, and 2006 editions)
7. NFPA 5000 Building Construction and Safety Code (2003 and 2006 editions)

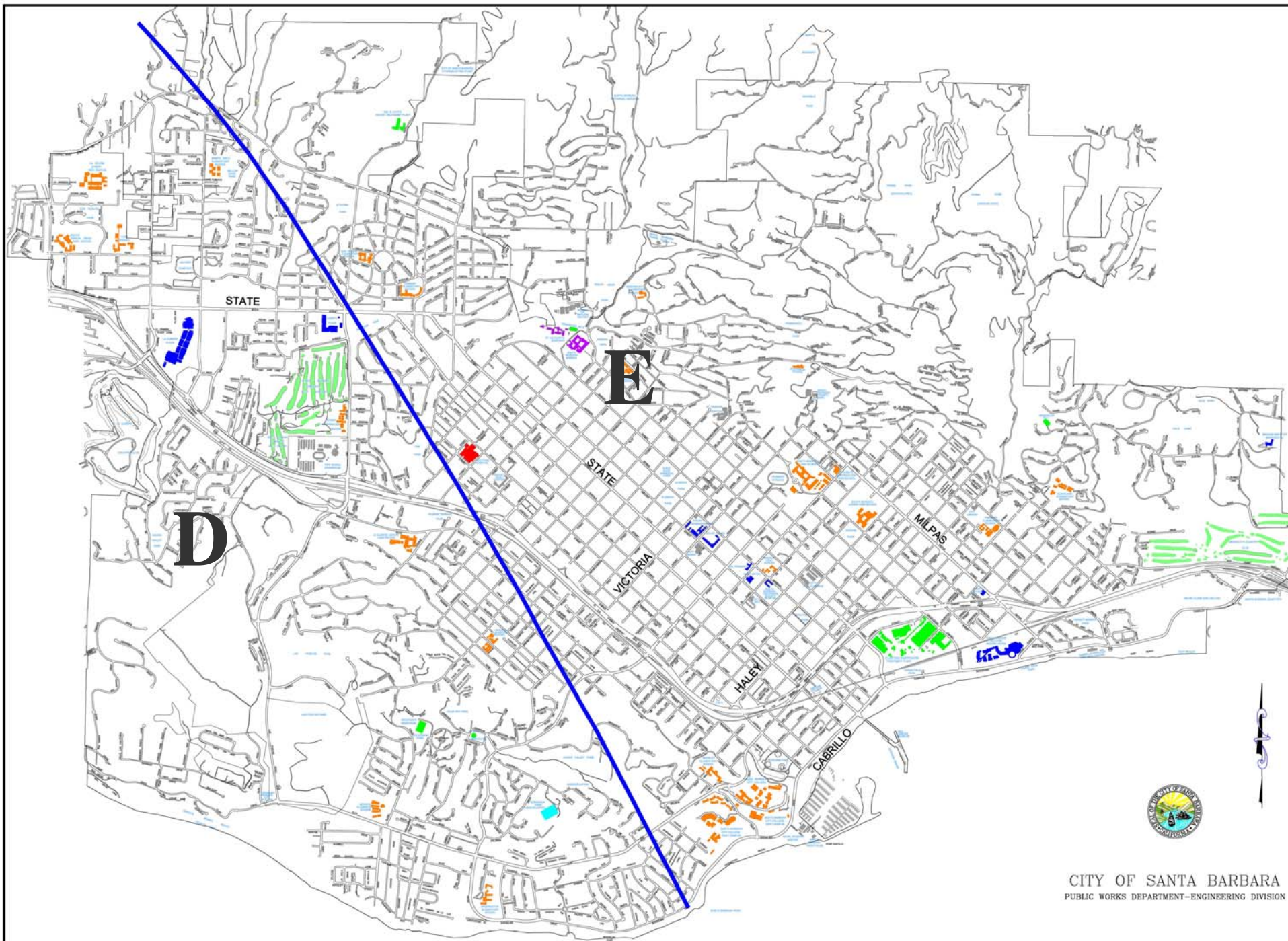
[Ground motion maps are now available in PDF format.](#)

[Ground Motion Data Files](#)

Steps to install java

The Java(TM) 2 Runtime Environment is freely available from SUN at the URL <http://java.sun.com/javase/downloads/index.jsp>

1. Follow the URL above
2. Click the download link for the current **Java Runtime Environment (JRE)** in the middle of the page
3. Read and Accept the License Agreement
4. Choose the correct platform, download, and install the Java(TM) 2 Runtime Environment, Standard Edition
5. As with all software, if you are unsure contact your System Administrator with questions



Conventional Construction

- ◆ Basic Limitations - 2308.2 – 2308.10
- ◆ SDC "B" & "C" – Basic + 2308.11
- ◆ SDC "D" & "E" - Basic + 2308.11 + 2308.12

Basic Limitations – 2308.2

- ◆ 1. limited to 3 stories
- ◆ 2. Bearing walls floor-to-floor ht. limited to –
 - 10' studs.
 - + max. 16" depth floor framing

Basic Limitations – 2308.2

- ◆ 3. Loads not to exceed;
 - Avg. dead loads shall not exceed 15 psf for combined roof & ceiling, exterior walls, floors and partitions.
 - Live loads not to exceed 40 psf for floors.
 - Precludes use of masonry or concrete walls above grade.

Basic Limitations 2308.2

- ◆ 4. Wind speed not to exceed 100 mph
- ◆ 5. Roof trusses/rafters not to exceed 40 ft. span.
- ◆ 6. Conventional construction not allowed for Occupancy Category IV buildings – T 1604.5
 - Essential facilities.

General Provisions

- ◆ 2308.3 Braced Wall Lines -35 ft o.c. both ways max. 12' 6" from each end.
 - Sill Anchorage – 4 ft. o.c. for structures over 2 stories in height.
- ◆ 2308.5 Connectors – Comply with 2409.
- ◆ 2308.6 Foundations
 - Per Chapt 18
 - 1/2" x 7" bolts
 - Min. 2 per piece w/in 12" of end
 - 6' o.c. spacing

General Provisions

◆ 2308.7 Girders

- Min. 4x6 at 8' o.c. <6' span
- Others must be engineered

◆ 2308.8.4 Bearing partitions

- Bear on girders, beams, double joists for parallel
- Within joist depth if perpendicular

◆ Lateral Support

- Depth-to-thickness ratio greater than 5:1 shall have one edge held for entire length
- >6:1, both edges held or blocking at 8' o.c.

General Provisions

- ◆ 2308.9.2.1 Top plates
 - 48" overlap with (8) 16d nails each side
 - Exception;
 - Single plate allowed for any wall with 3" x 6" steel plate w/ (6) 8d nails and joists/trusses directly over studs.

General Provisions

- ◆ Bracing – 2308.9.3
 - 8 listed types
 - 2 alternate braced walls - 2308.9.3.1
 - Both are the same as previous
 - 1 for two story
 - 1 for single story

General Provisions

- 2 alternate bracings where next to door or window –2308.9.3.2
- Portal systems"-
 - 16" x 10', for one story
 - 24" X 10 for first of two stories
 - Header span min. 6', max 18'
 - (2) 2x12's allowed
 - Strap header to inner studs
 - (2) HD's & (1) AB

General Provisions

- ◆ 2308.9.4 Cripple Walls.
 - No Table
 - Min. 14" or solid blocked
- ◆ 2308.10 Roof framing
 - See Table 2308.10.1 for rafter tie connection requirements.
 - Nailing schedule now 2304.9.1

The background of the slide features a vertical strip on the left side showing a photograph of a building with a clock tower and a garden. The rest of the slide has a solid blue background with faint, overlapping circular patterns.

2308.11

SDC "B" & "C" Limitations

SDC B/C

- ◆ Stories not to exceed 2 in SDC "C" duplex & SFR may be 3.
- ◆ Additional exceptions for concrete/masonry veneer above basement.
- ◆ Stepped footing requirements
- ◆ Additional req.'s for openings in horizontal diaphragms.

The background of the slide features a photograph of a building with a prominent clock tower, partially obscured by a large blue overlay. The overlay contains white text and decorative white curved lines. The text is centered and reads "2308.12" and "SDC 'D' & 'E' Limitations".

2308.12

SDC "D" & "E" Limitations

SDC D/E

- ◆ In addition to previous from SDC B&C & Basic
- ◆ Not to exceed 1 story except 2 stories in duplexes/SFRs.
- ◆ Additional above grade masonry veneer limitations
 - May not be on cripple walls.
 - Braced wall must equal 45% of line

SDC D/E

- ◆ Braced wall lines not to exceed 25 feet.
- ◆ Can use only types of wall as per T2308.12.4
- ◆ Cripple walls greater than 14" considered a story.
- ◆ Start within 8' of each end of line.

SDC D/E

- ◆ Braced line sheathing – see Table 2308.12.4 – last column only
 - Single story – 25' G-P (includes stucco), 12' for wood sheathing
 - First of two stories – GWB not allowed, 21'4" for wood sheathing
 - Cannot use G-P on both sides.
 - S-W nailing per T-2304.9.1 item 31.

TABLE 2308.12.4
WALL BRACING IN SEISMIC DESIGN CATEGORIES D AND E
(Minimum Length of Wall Bracing per each 25 Linear Feet of Braced Wall Line^a)

CONDITION	SHEATHING TYPE ^b	$S_{DS} < 0.50$	$0.50 \leq S_{DS} < 0.75$	$0.75 \leq S_{DS} \leq 1.00$	$S_{DS} > 1.00$
One story	G-P ^c	10 feet 8 inches	14 feet 8 inches	18 feet 8 inches	25 feet 0 inches
	S-W	5 feet 4 inches	8 feet 0 inches	9 feet 4 inches	12 feet 0 inches
Story below top story [HCD 1]	G-P ^{c,d}	18 feet 8 inches ^d	NP	NP	NP
	S-W ^d	10 feet 8 inches ^d	13 feet 4 inches ^d	17 feet 4 inches ^d	21 feet 4 inches ^d
Bottom story of three stories [HCD 1]	G-P	Conventional construction <u>not permitted</u> ; conformance with Section 2301.2, Item 1 or 2 is required.			
	S-W				

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Minimum length of panel bracing of one face of the wall for S-W sheathing or both faces of the wall for G-P sheathing; h/w ratio shall not exceed 2:1. For S-W panel bracing of the same material on two faces of the wall, the minimum length is permitted to be one-half the tabulated value but the h/w ratio shall not exceed 2:1 and design for uplift is required.
- b. G-P = gypsum board, fiberboard, particleboard, lath and plaster or gypsum sheathing boards; S-W = wood structural panels and diagonal wood sheathing. NP = not permitted.
- c. Nailing as specified below shall occur at all panel edges at studs, at top and bottom plates and, where occurring, at blocking:
 - For 1/2-inch gypsum board, 5d (0.113 inch diameter) cooler nails at 7 inches on center;
 - For 5/8-inch gypsum board, No. 11 gage (0.120 inch diameter) at 7 inches on center;
 - For gypsum sheathing board, 1 3/4 inches long by 7/16-inch head, diamond point galvanized nails at 4 inches on center;
 - For gypsum lath, No. 13 gage (0.092 inch) by 1 1/8 inches long, 19/64-inch head, plasterboard at 5 inches on center;
 - For Portland cement plaster, No. 11 gage (0.120 inch) by 1 1/2 inches long, 7/16-inch head at 6 inches on center;
 - For fiberboard and particleboard, No. 11 gage (0.120 inch) by 1 1/2 inches long, 7/16-inch head, galvanized nails at 3 inches on center.
- d. [HCD 1] Applies to detached one- and two- family dwellings only.

SDC D/E

- ◆ Braced line sheathing
 - Distance is the SUM of lengths at each line.
 - Start max. 8' from each end.
 - May NOT use Alternate walls in 2308.9.3.
 - Cripple walls $> 14''$ are a story and must be braced. See 2308.12.4 for interior braced lines no above continuous found.

SDC D/E

- ◆ CC not allowed in irregular portions of the building 2308.12.6.
 - 6 ways to be “irregular”
- ◆ Anchorage of exterior means of egress
 - Positively anchored at max. 8' o.c.
 - Toenails, Nails subject to withdrawal not allowed.

SDC D/E

- ◆ Steel Plate Washers – 2308.12.8
 - 3" x 3" x 1/4" (.229).
 - 1 3/4" length diagonal slot OK, 3/16" greater than bolt dia. w/ standard washer too.
- ◆ SDC E –
 - 5/8" dia. Anchor bolt req'd.

Additional or “New” Provisions

- ◆ Table 2308.9 Header & Girder Spans.
- ◆ Portal wall systems as alternate braced wall panels – 2308.9.3.2
- ◆ Soils Report Required in SDC “D”, “E”, & “F”
 - Mandatory liquefaction testing

Foundations – Chapt 18

- ◆ Soils Report req'd 1802.2.6 & .7
 - Liquefaction study required ?
- ◆ 1805.4 & Table 1805.4.2
 - See 1908.1.5 exceptions
 - ACI 318 Chapter 22